

Abstract Submitted  
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**The influence of small additions of diethylenetriamine on the detonation waves stability for nitromethane/acetone solution**<sup>1</sup> VALENTINA MOCHALOVA, ALEXANDER UTKIN, IPCP RAS — Instability of detonation front in nitromethane/acetone (NM/A) solution was observed in our previous work: at 10% of acetone the amplitude of heterogeneities was about 20 microns and at 20% of acetone this size was 50 microns. It is known that small additions of diethylenetriamine (DETA) considerably increase the initial rate of chemical reaction in detonation wave for NM. It was expected that DETA influences on the stability of detonation waves in NM/A solution too. To investigate this phenomenon laser interferometer VISAR was used for recording of particle velocity profiles in detonation waves for NM/A. It was found that at addition of 0,5% DETA to NM/A 90/10 the oscillations in velocity profile decrease in several times. And at 1% DETA the profile is smooth, i.e. the heterogeneities disappear and detonation wave becomes steady-state. In NM/A 80/20 at addition of 5% DETA the heterogeneities size is reduced by the order. The increase of detonation wave velocity of NM/A more than 1% was observed at small concentrations of DETA. Thus it was found that small additions of DETA to NM/A solution with unstable detonation front result not only in decrease heterogeneities size but in their disappearance and stabilization of detonation waves.

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